Met Office

NEWS

# AI to take weather forecasting by storm

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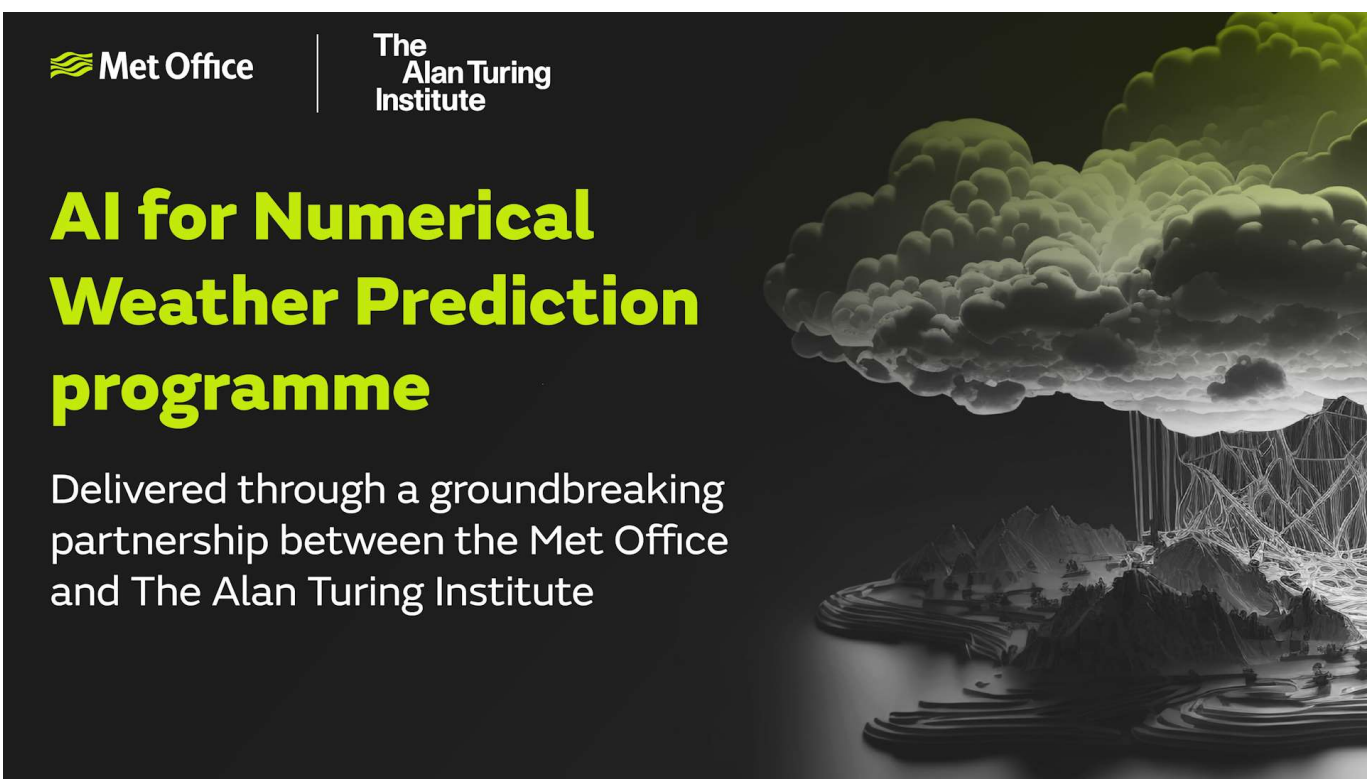
## Artificial intelligence (AI) has the potential to revolutionise weather forecasting.

That is the belief from British meteorologists as researchers from The Alan Turing Institute and the Met Office join forces in a new collaboration.

The partnership, announced today (Tuesday 31 October 2023), will see the organisations working together to develop AI models that will enable improved forecasting, including for extreme weather events, helping to save lives and protect critical national infrastructure.

The UK's national meteorological service has a track record of using advanced technology to help predict the weather. Using information from satellites as well as observational data from weather stations on Earth, they run simulations on a supercomputer that generates forecasts used by millions of people around the world.


Met Office
The Alan Turing Institute
AI for Numerical Weather Prediction programme
Delivered through a groundbreaking partnership between the Met Office and The Alan Turing Institute

It is hoped that the new collaboration will accelerate work to deploy machine learning technology alongside traditional techniques to improve the forecasting of some extreme weather events, such as exceptional rainfall or impactful thunderstorms, with even greater accuracy, helping communities to increase their resilience.

In the first phase of the project, researchers will develop a new AI model, known as a graph neural network, to forecast weather patterns. This will allow them to test the accuracy of their new model against existing weather forecasting methods – so called numerical weather prediction.

The researchers will then incorporate their new AI model into the Met Office's existing supercomputer infrastructure to be able to more routinely compare its accuracy to their existing physics-based forecasting methods already in use.

When at a deployable stage, the technology will help save lives by improving the forecasting of extreme weather events. It will also boost the UK economy by increasing the number of tailored forecasts, providing detailed information to aid decision-making across the public sector and private industry.

## Enormously ambitious project

Dr Jean Innes, CEO at The Alan Turing Institute, said: "This project aims to tackle the big hold-out problem in weather prediction – fast and accurate prediction of impactful weather events, which sadly are capable of bringing devastating consequences to communities in the UK and abroad.

"This is an enormously ambitious project. Using the complex and rich meteorological datasets and expertise from the Met Office, and AI expertise from the Turing, we aim to save lives, protect infrastructure and push the boundaries of scientific understanding for the benefit of communities here in the UK and internationally."

Professor Kirstine Dale is the Met Office's Chief AI Officer. She said: "We are excited to work with The Turing Institute to accelerate AI-based forecasting. AI is increasingly becoming a feature of many people's lives and the weather and ongoing climate change affect everyone on earth. So, developing artificial intelligence for weather forecasting is a logical progression of the technology that has the potential for such wide benefits to societies around the world."

Minister for AI, Viscount Camrose, said: "AI models will have a transformative effect on our ability to forecast and respond to extreme weather events that threaten lives and property. As I have seen first-hand, the Met Office's swift adoption of this rapidly-emerging technology will not only help in our preparedness, but also enable a more effective response in the fight against extreme weather and climate change."

This ambitious project is in line with the Turing's purpose to make great leaps in data science and artificial intelligence research to change the world for the better. The partnership is part of the Turing's Environment and Sustainability Grand Challenge which aims to address the climate and biodiversity crisis and the need for greater sustainability and demonstrates the shared commitment from each of the partners to achieving positive change with transformative technology.

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